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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/730,358

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Satofumi Kinei

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EXAMINER

MOORE, KARLA A

ART UNIT

PAPER NUMBER

1763

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

03/20/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/730,358

Applicant(s)

KINEI, SATOFUMI

Examiner

Karla Moore

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-7 and 9-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-7 and 9-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 9 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4 and 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,074,696 to Sato in view of U.S. Patent No. 4,543,576 to Hieber et al. and U.S. Patent No. 6,093,252 to Wengert et al.

3. Sato discloses a semiconductor device production apparatus substantially as claimed and comprising: a rotary table section (Figure 7, multiple parts as described hereafter) for supporting a wafer (S) therein and a hollow shaft (61 and 62) for rotating the rotary table section; a chamber (2) for housing the rotary table section; a heater (29) provided in the chamber for heating the wafer; a thermocouple (51a and 51b) having a distal and proximal ends, the distal end of the thermocouple being brought into close relation to the wafer; and a system for circulating cooling water (72) in the hollow shaft to cool structures.

4. However, Sato fails to teach a temperature measuring section coupled to the proximal end of the thermocouple/temperature sensing element and provided in the vicinity of the hollow shaft for sensing a temperature of the wafer through the thermocouple/temperature sensing element and converting the sensed temperature to a first signal and a signal generating section for converting the first signal into a second signal detectable from outside the chamber.

5. Heiber et al. disclose a semiconductor device production apparatus substantially as claimed in Figures 1-5 and comprising: a multi-part temperature sensing element for sensing the temperature of the wafer; temperature measuring section (25) for converting the sensed temperature into a first signal to output the first signal; and a signal generating section (26) for converting the output first signal into a second signal detectable from outside the chamber (via transmitter 27); wherein the temperature sensing

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element, the temperature measuring section and the signal generating section are attached to a rotary table section (each is arranged in measuring system, 18, attached to pallet 7) for the purpose of measuring electrical resistance and temperature during the manufacture of thin films deposited on substrate wherein the measurement occurs contact-free and the overall measuring system is constructed in a miniaturized format so that it can be secured to the substrate holder without significant disruption of the geometry (abstract and column 3, rows 21-26).

6. It would have been obvious to one of ordinary skill in the art to have provided an overall measuring system comprising in Sato further comprising a temperature measuring section coupled to the proximal end of the thermocouple/temperature sensing element and provided in the vicinity of the hollow shaft for sensing a temperature of the wafer through the thermocouple/temperature sensing element and converting the sensed temperature to a first signal and a signal generating section for converting the first signal into a second signal detectable from outside the chamber in order to carry out contact-free resistance and temperature measurements during a manufacturing process using a overall measuring system constructed in a miniaturized format so that it can be secured to the substrate holder without significant disruption of the geometry as taught by Heiber et al.

7. Sato and Heiber et al. fail to disclose that the heater and the thermocouple or the heater and the hollow shaft are provided on opposite sides of the wafer.

8. Wengert al. disclose teach providing heaters (lamps) around (i.e. above and below) wafer resting on a support for the purpose of heating a wafer to achieve uniform heating and processing (column 15, rows 10-63). This configuration would mean that a heater and the thermocouple or a heater and the hollow shaft are provided on opposite sides of the wafer

9. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided heaters above and below the wafer in Sato and Heiber et al. in order to heat a wafer to achieve uniform heating and processing as taught by Wengert et al.

10. Examiner also notes that the courts have ruled that the mere rearrangement of parts which does not modify the operation of a device is prima facie obvious. In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950). In re Kuhle, 526 F.2d 553, 188 USPQ 7 (CCPA 1975).

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11. With respect to claim 4, in Heiber et al. the signal generating section comprises a wireless transmitter (27).

12. With respect to claims 9 and 10, Sato teaches that the purpose of the cooling section, which includes circulating a system of cooling water through and around the rotating shaft, is to protect heat sensitive structures of the apparatus from the heat provided by the heating mechanism for the substrate (see column 10, rows 23-67; column 14, rows 8-16 and 39-48; and column 17, rows column 17, rows 58-64).

13. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the cooling section in and around the rotating shaft in Sato and Heiber et al. as described above in order to cool at least one of the temperature measuring section the signal generating section as taught by Heiber et al.

14. The distal end of the thermocouple projects outwardly from a surface of the rotary table (64) so as to be brought into close relation or in contact with a bottom surface of the wafer. The additional recitations of claims 11-13 are addressed above.

15. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sato, Hieber et al. and Wengert et al. as applied to claims 1, 4 and 9-13, and further in view of U.S. Patent Pub. No. 2003/0168171 A1 to Tanaka et al.

16. Sato, Hieber et al. and Wengert et al. disclose the invention substantially as claimed and as described above.

17. However, Sato, Hieber et al. and Wengert et al. fail to teach the signal generating section comprises a detachable storage device.

18. Tanaka et al. teach the use of a detachable storage device in processing data associated with semiconductor manufacturing processes for the purpose of advantageously reducing the load on a data collecting device and for easily controlling collected data (paragraphs 44-48).

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19. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the signal generating section comprising a detachable storage device in Sato, Hieber et al. and Wengert et al. in order to advantageously reduce the load on the data collecting device and easily control collected data as taught by Tanaka et al.

20. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sato, Hieber et al. and Wengert et al. as applied to claims 1, 4 and 9-13, and further in view of U.S. Patent No. 4,683,143 to Riley.

21. Sato, Hieber et al. and Wengert et al. disclose the invention substantially as claimed and as described above.

22. However, Sato, Hieber et al. and Wengert et al. fail to teach the signal generating section comprises a display device.

23. Riley teach the use of a display device for displaying processing conditions for the purpose of periodically updating a user regarding the status of a process while controlling a process (column row row 57, through column 2, row 5).

24. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a display device in Sato, Hieber et al. and Wengert et al. in order to periodically update a user regarding the status of a process while controlling the process as taught by Riley.

25. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sato, Hieber et al., Wengert et al. and Tanaka et al. as applied to claim 3, and further in view of U.S. Patent No. 4,683,143 to Riley.

26. Sato, Hieber et al., Wengert et al. and Tanaka et al. disclose the invention substantially as claimed and as described above.

27. However, while Heiber et al. do disclose the use of a computer/storage data reader (30) for accepting measured data from the apparatus, wherein the computer is located outside the chamber;

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Sato, Hieber et al. and Tanaka et al. fail to explicitly teach the apparatus further comprises a heater controlling section, also provided outside the chamber.

28. Riley discloses the use of a heater controller located outside a processing chamber for the purpose of controlling internal heaters used to regulate temperature of a processing apparatus (column 3, rows 47-56).

29. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a heater controller in Sato, Hieber et al., Wengert et al. and Tanaka et al. in order to control internal heaters used to regulate temperatures of the processing apparatus as taught by Riley.

30. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sato, Hieber et al. and Wengert et al. as applied to claims 1, 4 and 9-13, and further in view of U.S. Patent No. 4,683,143 to Riley.

31. Sato, Hieber et al. and Wengert et al. disclose the invention substantially as claimed and as described above.

32. However, while Sato, Hieber et al. and Wengert et al. do disclose a receiver (29) for receiving the wireless signal from the transmitter, wherein the receiver is located outside the chamber; Sato and Hieber et al. fail to explicitly teach the apparatus further comprises a heater controlling section, also provided outside the chamber.

33. Riley discloses the use of a heater controller located outside a processing chamber for the purpose of controlling internal heaters used to regulate temperature of a processing apparatus (column 3, rows 47-56).

34. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a heater controller in Sato, Hieber et al. and Wengert et al. in order to control internal heaters used to regulate temperatures of the processing apparatus as taught by Riley.

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Response to Arguments

35. Applicant's arguments with respect to claims 1, 3-7 and 9-13 have been considered but are moot in view of the new ground(s) of rejection. Stevens et al. disclose the use of heaters both on the top and bottom side of a wafer in a processing apparatus, which would place the heater and the thermocouple or the heater and the hollow shaft are provided on opposite sides of the wafer.

36. Further, as noted above, the courts have ruled the mere rearrangement of parts which does not modify the operation of a device is prima facie obvious. In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950). In re Kuhle, 526 F.2d 553, 188 USPQ 7 (CCPA 1975).

Conclusion

37. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 571.272.1440. The examiner can normally be reached on Monday-Friday, 9:00 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571.272.1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



KARLA MOORE
PRIMARY EXAMINER
Art Unit 1763
14 March 2007